(1863), and in the controversy as to the use or disuse of the Athanasian symbol (1872). It was naturally and widely mis­understood. Some who did not know him thought, or pre­tended to think, that he was a Socinian or a free-thinker. The world at large knew better; but even Temple warned him, in the case of *Essays and Reviews,* “ You will not keep friends if you compel them to feel that in every crisis of life they must be on their guard against trusting you.” (δ) As regards the second point, Tait was concerned with it during the whole of his episcopate, and above all on the side of ritual, on which it naturally came into most direct conflict with the recognized ecclesiastical practice of the day. He had to deal with the St George’s-in-the-East riots in 1859, and the troubles at St Alban’s, Holborn, in their earlier stages (1867); he took part as assessor in the Privy Council judgment in the Ridsdale case (1877); he was more closely concerned than any other bishop with the agitation against confession in 1858, and again in 1877. His method throughout was the same: he endeavoured to obtain a compliance to the law as declared by the courts; failing this, he made the most earnest efforts to secure obedience to the ruling of the Ordinary for the sake of the peace of the Church; after this, he could do nothing. He did not perceive how much of reason the “ ritualists ” had on their side: that they were fighting for practices which, they contended, were covered by the letter of the rubric; and that, where rubrics were notoriously disregarded on all hands, it was not fair to proceed against one class of delinquent only. In fact, if others were inclined to ignore it altogether, Tait could hardly realize anything but the connexion between the English Church and the State. From such a position there seemed to be no escape but in legislation for the deprivation of the recalcitrant clergy; and the Public Worship Regulation Act (1874) was the result. For this Tait was by no means responsible as a whole: some of the provisions which proved most irksome were the result of amendments by Lord Shaftesbury which the bishops were unable to resist; and it must be borne in mind that the most disastrous results of the measure were not contemplated by those who were instru­mental in passing it. The results followed inevitably: clergy were cited before a new tribunal, and not only deprived but imprisoned. A widespread feeling of indignation spread not only among High Churchmen, but among many who cared little or nothing for the ritual practices involved; and it seemed impossible to foretell what the outcome would be. But the aged archbishop was moved as much as anybody, and tried hard to mitigate such a state of things. At length, when the Rev. A. H. Mackonochie was on the point of being deprived of his benefice of St. Alban’s, Holborn, for contumacy, the arch­bishop, then on his deathbed at Addington, took steps which resulted in the carrying out of an exchange of benefices (which had already been projected), which removed him from the juris­diction of the court. This proved to be the turning-point; and although the ritual difficulty by no means ceased, it was afterwards dealt with from a different point of view, and the Public Worship Regulation Act became practically obsolete. The archhishop died on the 3rd of December (Advent Sunday), 1882, leaving a legacy of peace to the Church.

Tait was a Churchman by conviction; but although the work of his life was all done in England, he remained a Scotsman to the end. It was the opinion of some that he never really under­stood the historical position of the English Church and took no pains to learn. John Tillotson, one of his predecessors in the archbishopric, was a favourite hero of his, and in some ways the two men resembled one another. But Tait had none of Tillotson’s gentleness, and he rode roughshod over the obstacles in his way. He cannot be called a great ecclesiastical statesman, but he administered his office well and was un­doubtedly one of the foremost public men of his day.

See R. T. Davidson and D. Benham, Life *of Archbishop Tait,* 2 vols. (1891); A. C. Tait, *Catharine and Craufurd Tait* (1880).

l (W. E. Co.)

TAIT, ARTHUR FITZWILLIAM (1819-1905), American artist, was bom near Liverpool, England, on the 5th of August 1819. He emigrated to the United States in 1850, and was identified with the art life of New York until his death. In 1858 he was elected to full membership in the National Academy of Design, New York. He died at Yonkers, New York, on the 28th of April 1905. He painted barnyard fowls and wild birds as well as sheep and deer, with great dexterity, and repro­ductions of his minute panels of chickens had an enormous vogue.

TAIT, PETER GUTHRIE (1831-1901), Scottish physicist, was bom at Dalkeith on the 28th of April 1831. After attending the Academy at Edinburgh and spending a session at the University, he went up to Cambridge as a member of Peterhouse, and graduated as senior wrangler and first Smith’s prizeman in 1852. As a fellow and lecturer of his college he remained in Cambridge for two years longer, and then left to take up the professorship of mathematics at Queen’s College, Belfast. There he made the acquaintance of Thomas Andrews, whom he joined in researches on the density of ozone and the action of the electric discharge on oxygen and other gases, and by whom he was introduced to Sir W. R. Hamilton and quaternions. In 1860 he was chosen to succeed his old master, J. D. Forbes, as professor of natural philosophy at Edinburgh, and this chair he occupied till within a few months of his death, which occurred on the 4th of July 1901, at Edinburgh. The first scientific paper that appears under Tait’s name only was published in 1860. His earliest work dealt mainly with mathematical subjects, and especially with quaternions (*q.v.*), of which he may be regarded as the leading exponent after their originator, Hamilton. He was the author of two text-books on them—one an *Elementary Treatise on Quaternions* (1867), written with the advice of Hamilton, though not published till after his death, and the other an *Introduction to Quaternions* (1873), in which he was aided by Professor Philip Kelland (1808-1879), who had been one of his teachers at Edinburgh. In addition, quaternions was one of the themes of his address as president of the mathematical section of the British Association in 1871. But he also produced original work in mathematical and ex­perimental physics. In 1864 he published a short paper on thermodynamics, and from that time his contributions to that and kindred departments of science became frequent and important. In 1871 he emphasized the significance and promise of the principle of the dissipation of energy. In 1873 he took thermoelectricity for the subject of his discourse as Rede lecturer at Cambridge, and in the same year he presented the first sketch of his well-known thermoelectric diagram before the Royal Society of Edinburgh. Two years later researches on “ Charcoal Vacua ” with J. Dewar led him to see the true dynamical explanation of the Crookes radiometer in the large­ness of the free path of the molecule of the highly rarefied air. From 1879 to 1888 he was engaged on difficult experimental investigations, which began with an inquiry into the corrections required, owing to the great pressures to which the instruments had been subjected, in the readings of the thermometers em­ployed by the “ Challenger ” expedition for observing deep-sea temperatures, and which were extended to include the com­pressibility of water, glass and mercury. Between 1886 and 1892 he published a series of papers on the foundations of the kinetic theory of gases, the fourth of which contained what was, according to Lord Kelvin, the first proof ever given of the Waterston-Maxwell theorem of the average equal partition of energy in a mixture of two different gases; and about the same time he carried out investigations into impact and its duration. Many other inquiries conducted by him might be mentioned, and some idea may be gained of his scientific activity from the fact that a selection only from his papers, published by the Cambridge University Press, fills three large volumes. This mass of work was done in the time he could spare from his professorial teaching in the university. In addition, he was the author of a number of books and articles. Of the former, the first, published in 1896, was on the dynamics of a particle; and afterwards there followed a number of concise treatises on thermodynamics, heat, light, properties of matter and dynamics,